

# Claims

- [c1] 1. An apparatus for growing stoichiometric lithium niobate and lithium tantalate single crystals, the apparatus comprising:
- a chamber,
  - a crystal pulling system,
  - a long crucible arranged inside the chamber;
  - a separation member arranged in the long crucible to divide an inner space of the long crucible into a melting zone and a feeding zone, wherein the melting zone is located above the feeding zone;
  - a heating system surrounding a sidewall of the chamber;
  - and
  - a pushing/rotating system arranged under the long crucible to rotate and push the long crucible.
- [c2] 2. The apparatus of claim 1, wherein the separation member comprises an insulative plate, a shallow crucible, and a crucible with a perforated wall.
- [c3] 3. The apparatus of claim 1, wherein the separation member is made of a material selected from platinum.
- [c4] 4. The apparatus of claim 1, wherein the separation

member is made of a material selected from iridium.

[c5] 5.The apparatus of claim 1, further comprising a pre-heater outside the chamber, corresponding to the position of the feeding zone.

[c6] 6.The apparatus of claim 1, further comprising a post-heater outside the chamber, corresponding to the upper portion of the long crucible.

[c7] 18.An apparatus for growing stoichiometric lithium niobate and lithium tantalate single crystals, the apparatus comprising:  
a chamber,  
a crystal pulling system arranged above the chamber,  
a long crucible arranged inside the chamber;  
a heating system surrounding sidewall of the chamber;  
and  
a pushing/rotating system arranged under the long crucible to rotate and push up the long crucible.

[c8] 19.The apparatus of claim 18, wherein the heating system further comprises a preheater outside the chamber, corresponding to the position of the feeding zone.

[c9] 20.The apparatus of claim 18, wherein the heating system further comprises a post-heater outside the chamber corresponding to the upper portion of the long crucible.

cible.